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Regarding:

Reinforced Composite System for Constructing Insulated Concrete Structures by
Daniel D. Dunn et al.
Application/ Control Number: 10/660,944
Art Unit: 3635
Examiner: Yvonne M. Horton

Please find below and/or attached a response to the Office communication mailed on 09/27/2004.

As requested I am sending a copy of the claims with the proper status identifier for each claim.

CLAIMS

1. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures comprising:

panels having inside and outside surfaces, top, bottom and end edges, said panels placed horizontally in an opposing and parallel, spaced-apart relationship, panels having an interlocking means at the top and bottom edge of each panel; said panels comprising,

a foam plastic core between outside and inside reinforcement layers, wherein said reinforcement layers extend substantially over, and are adhered to, the entire outside and inside surfaces of said foam plastic core, thus defining the surfaces of said panels, said reinforcement layers being substantially less in thickness than said foam plastic core and having greater tensile strength than foam plastic core, wherein

outside reinforcement layer, foam plastic core and inside reinforcement layer are continuously adhered together over their entire area thus acting together as a composite panel to resist deflection;

said panels having tapered edges, the outside face of each panel being tapered starting from each edge of the panel extending away from the panel edges toward the middle of each panel;

at least two vertical studs embedded in each panel extending the full height of

the panels, said studs spaced longitudinally and parallel from each other, said studs adhered within foam plastic core, the exterior of the panels being marked at each stud location allowing studs to be located visually; said studs comprising,

a flange for receiving mechanical fasteners and a groove for receiving spreaders, with a web member extending there between to interconnect the flange and groove, said webs comprising, a vertical member extending between and oriented transversely to the flange and the groove;

at least one horizontal stiffener embedded in each panel between inside and outside surfaces of foam core and parallel to inside and outside surfaces of foam core, said horizontal stiffeners located equal distances from top and bottom edges of panels, said horizontal stiffeners adhered within foam plastic core;

said interlocking means comprising, a tongue extending from and parallel to the top edge of each panel, and a complementary groove recessed into and parallel to the bottom edge of each panel, said tongue and groove comprising complimentary preformed units adhered to the foam plastic core, the groove unit of each panel having appendages protruding into the grove, the spacing of the appendages corresponding with the locations of embedded studs, and the tongue unit of each panel having slots that compliment said appendages, such that when said panels are stacked the appendages in the grooves engage the slots in the tongues forcing studs from adjacent panels into a vertical alignment;

a plurality of spreaders at each stud location, extending between opposing panels and slidably engaging the studs in opposing panels, thereby creating a form

with a cavity between the inside surfaces of the panels for receiving fluid concrete; said spreaders comprising,

a first flange and second flange for engaging studs, flanges oriented in an opposing parallel relationship, flanges being connected by horizontal members, each horizontal member having multiple formations to support and restrain wall reinforcement bars, wherein

formations in the topmost horizontal members are located in the top of said members, top most horizontal member being located substantially at the top of the flanges, and wherein

formations in the bottommost horizontal members are located in the bottom of said members, bottommost horizontal member being located substantially at the bottom of the flanges, thus

when spreaders are stacked the formations in the top and bottom horizontal members compliment the formations of adjacent spreaders, the horizontal member from the upper spreader resting upon the horizontal member of the spreader below, the complimentary formations each forming half of a full circle, allowing wall reinforcement bars to be restrained within the circular formations,

intermediate horizontal members having formations on both sides of the member allowing spreaders to be reversible.

2. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures as claimed in claim **1** wherein the horizontal stiffener comprises a hollow tubular member adhered within the foam plastic core, located equal distances from top and bottom edges of panels and extending substantially between the end edges of the panels.

3. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures as claimed in claim **2** wherein the hollow horizontal stiffener is utilized to install electrical wiring.

4. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures as claimed in claim **1** wherein the inside reinforcement layer extends around the tongue extending from and parallel to the top edge of each panel and into the groove recessed into and parallel to the bottom edge of each panel, thus defining and reinforcing the tongue and groove.

5. (ORIGINAL) In a reinforced composite system for constructing insulated concrete structures, a hinged form comprising:

panels having inside and outside surfaces, top, bottom and end edges, said

panels placed horizontally in an opposing and parallel, spaced-apart relationship, panels having an interlocking means at the top and bottom edge of each panel;

at least one opposing panel having at least one vertical or horizontal pivotal section extending substantially across the panel, the panel being discontinuous at the pivotal location;

a flexible pivotal member interconnecting the discontinuous panel such that each side of the discontinuous panel is rotationally independent from the remainder of the panel, said pivotal section comprising an elongated flexible member adhered to the panel;

at least one vertical stud embedded in each panel on each side of pivotal section extending substantially the full height of the panels, said studs spaced longitudinally and parallel from each other;

a plurality of spreaders at each stud location, extending between opposing panels and engaging the studs in opposing panels thereby creating a form with a cavity between the inside surfaces of the panels.

6. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures, as claimed in claim **5** comprising:

opposing panels each having at least one vertical pivotal section, each panel being rotatably movable between a flat position and rotated position, wherein the outer panel defines the outside of a corner and the inside panel defines the inside of a

corner.

7. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures, as claimed in claim **5** comprising:

opposing panels, first panel opposing panel having at least one horizontal pivotal section defining first and second discontinuous panel sections, said discontinuous panel sections being rotatably movable between a flat position and rotated position, wherein

the first discontinuous panel section defines a plane, the second discontinuous panel section having a first and second plane at an angle to one another,

the second discontinuous panel section being rotated at an angle to the first discontinuous panel section such that the first plane of the second discontinuous panel section extends at an angle to the plane of the first discontinuous panel section, the second plane of the second discontinuous panel section being parallel to and offset from the plane of the first discontinuous panel section, defining a haunch usable as a bearing ledge;

at least two vertical studs embedded in first discontinuous panel section extending to the pivotal section, said studs spaced longitudinally and parallel from each other;

at least two vertical studs embedded in second discontinuous panel section, said

studs spaced longitudinally and parallel from each other;

bearing ledge connectors at each stud location in second discontinuous panel section, slidably engaging the studs, said bearing ledge connectors comprising

a flange for engaging the studs and a groove for receiving spreaders, flange and groove connecting at a point, the flange extending outwardly at an angle from the groove, the outermost extent of the flange and groove being connected by at least one web member, web member having formations to accept wall reinforcement bars;

at least two vertical studs embedded in second opposing panel extending the full height of the panel, said studs spaced longitudinally and parallel from each other;

a plurality of spreaders at each stud location, extending between opposing panels and engaging the studs and bearing ledge connectors in opposing panels, thereby creating a form with a cavity between the inside surfaces of the panels.

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8. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures comprising:

form panels having inside and outside surfaces, top, bottom and end edges, panels having an interlocking means at the top and bottom edge of each panel, said panels comprising,

a foam plastic core between outside and inside reinforcement layers,

wherein said reinforcement layers extend substantially over, and are adhered to, the entire outside and inside surfaces of said foam plastic core, thus defining the surfaces of said panels, said reinforcement layers being substantially less in thickness than said foam plastic core and having greater tensile strength than foam plastic core, wherein

outside reinforcement layer, foam plastic core and inside reinforcement layer are continuously adhered together over their entire area thus acting together as a composite panel to resist deflection;

at least two vertical studs embedded in each panel extending substantially the full height of the panels;

at least one horizontal stiffener embedded in each panel between inside and outside surfaces of foam core and parallel to inside and outside surfaces of foam core;

multiple opposing form panels being placed end to end in horizontal rows and stacked vertically, panels being staggered from each other in such a manner that ends of opposing panels are offset and end joints between adjacent rows of stacked panels do not line up vertically;

said interlocking means comprising, a tongue extending from and parallel to the top edge of each panel, and a complementary groove recessed into and parallel to the bottom edge of each panel, wherein the inside reinforcement layer of each panel extends around the tongue and into the groove of said panel thus defining and reinforcing the tongue and groove, the groove of each panel having appendages protruding into the groove, the spacing of the appendages corresponding with the

locations of embedded studs and the tongue of each panel having slots that compliment said appendages, such that when panels are stacked the appendages in the grooves engage the slots in the tongues forcing studs from adjacent panels into a vertical alignment;

the end interface of panels comprising, a stud halfway into, and protruding halfway from, the end edge of a first panel, and a complimentary slot in the end edge of a second panel, such that when the panels are placed end to end the panels interlock and spreaders may be installed to connect the opposing pairs of panels;

a plurality of spreaders at each stud location, extending between opposing panels and slidably engaging the studs in opposing panels, thereby creating a form with a cavity between the inside surfaces of the panels for receiving fluid concrete,

the spreaders being "full height spreaders," half the vertical height of panels, and "half height spreaders," half the height of the full height spreaders,

spreaders being stacked vertically, starting with a half height spreader with full height spreaders thereafter, such that at the top of each row of panels there is a full height spreader that engages the studs in the row below half its height and engages the studs in the row above the remaining half of its height, said spreaders comprising,

a first flange and second flange for engaging studs, flanges oriented in an opposing parallel relationship, flanges being connected by horizontal members, each horizontal member having multiple formations to support and restrain wall reinforcement bars,

wherein formations in the topmost horizontal members are located in the

top of said members, top most horizontal member being located substantially at the top of the flanges, and wherein

formations in the bottommost horizontal members are located in the bottom of said members, bottommost horizontal member being located substantially at the bottom of the flanges, thus,

when spreaders are stacked the formations in the top and bottom horizontal members compliment the formations of adjacent spreaders the horizontal member from the upper spreader resting upon the horizontal member of the spreader below, the complimentary formations each forming half of a full circle, allowing wall reinforcement bars to be restrained within the circular formations.

9. (ORIGINAL) A reinforced composite system for constructing insulated concrete structures as claimed in claim 8 comprising:

tapered panel edges, the outside face of each panel being tapered starting from each edge of the panel extending away from the panel edges toward the middle of each panel, such that when opposing panels are stacked vertically the horizontal and vertical joints between panels are indented inwardly from the face of the panels, allowing the joints to be pre-treated when covering the walls with an exterior finish such as stucco.